Electronic Version
Stylesheet Version v1.1.1

Claims

[c1] A magnetic resonance imaging assembly comprising:
a outer thermal shield having an operational temperature; and
a cold head sleeve assembly comprising:
a coldhead sleeve,
a plurality of braid elements mounted to a cooler block, said plurality of braid elements connecting said coldhead sleeve to said cooler block;
a highly thermally conductive block mounted between said cooler block and said outer thermal shield, said highly thermally conductive block welded to said outer thermal shield and welded to said cooler block, said highly thermally conductive block having greater thermal conductivity than said outer thermal shield.

[c2] A magnetic resonance imaging assembly as described in claim 1, wherein said highly thermally conductive block has a residual resistance ratio of 100 within said operational temperature.

[c3] A magnetic resonance imaging assembly as described in claim 1, wherein said highly thermally conductive block has a residual resistance ratio of 3000 within said opera-

tional temperature.

[c4] A magnetic resonance imaging assembly as described in claim 1, wherein said highly thermally conductive block comprises high purity aluminum.

[c5] A magnetic resonance imaging assembly as described in claim 1, wherein said highly thermally conductive block comprises a thermally conductive block cross-section, said thermally conductive block cross-section equal to a cooler block cross-section of said cooler block.

[c6] A magnetic resonance imaging assembly as described in claim 1, wherein said cooler block comprises copper.

[c7] A. magnetic resonance imaging assembly as described in claim 1, wherein said operational temperature is less than 50 degrees Kelvin.

[c8] A magnetic resonance imaging assembly as described in claim 1, wherein said highly thermally conductive block has a residual resistance ratio of equal to or greater than copper.

[c9] A magnetic resonance imaging assembly as described in claim 1, wherein said highly thermally conductive block comprises medium high purity aluminum.

[c10] A magnetic resonance imaging assembly comprising:

a thermal shield having an operational temperature; and

a cold sleeve assembly comprising:

a coldhead sleeve,

a plurality of braid elements mounted to a cooler block, said plurality of braid element connecting said coldhead sleeve to said cooler block;

a highly purity aluminum block mounted between said cooler block and said thermal shield, said highly purity aluminum block welded to said outer thermal shield and welded to said cooler block, said highly purity aluminum block having greater thermal conductivity than said thermal shield.

[c11] A magnetic resonance imaging assembly as described in claim 10, wherein said cooler block comprises copper.

[c12] A magnetic resonance imaging assembly as described in claim 10, wherein said high purity aluminum block has a residual resistance ratio of 100 within said operational temperature.

[c13] A magnetic resonance imaging assembly as described in claim 10, wherein said high purity aluminum block has a residual resistance ratio of 3000 within said operational temperature.

[c14] A magnetic resonance imaging assembly as described in

claim 10, wherein said high purity aluminum block comprises a thermally conductive block cross-section, said thermally conductive block cross-section equal to a cooler block cross-section of said cooler block.

[c15] A magnetic resonance imaging assembly as described in claim 10, wherein said operational temperature is less than 50 degrees Kelvin.

[c16] A method of maintaining an operational temperature of a thermal shield in a magnetic resonance imaging assembly comprising:
generating thermal energy within the thermal shield;
transferring said thermal energy to a cold head assembly comprising:
transferring said thermal energy from the thermal shield into a highly thermally conductive block welded to the thermal shield;
transferring said thermal energy from said highly thermally conductive block into a cooler block within said cold head assembly, said cooler block welded to said highly thermally conductive block.

[c17] A method of maintaining an operational temperature of a thermal shield in a magnetic resonance imaging assembly as described in claim 16, wherein said highly thermally conductive block comprises high purity aluminum.

[c18] A method of maintaining an operational temperature of a thermal shield in a magnetic resonance imaging assembly as described in claim 16, wherein said highly thermally conductive block comprises medium high purity aluminum.

[c19] A method of maintaining an operational temperature of a thermal shield in a magnetic resonance imaging assembly as described in claim 16, further comprising:
picking a material for said highly thermally conductive such that said highly thermally conductive block comprises a residual resistance ration equal to or greater than said cooler block within the operational temperature.

[c20] A method of maintaining an operational temperature of a thermal shield in a magnetic resonance imaging assembly as described in claim 16, further comprising:
picking a material for said highly thermally conductive such that said highly thermally conductive block comprises a residual resistance ration equal to or greater than said cooler block within the operational temperature; and
picking said material such that said highly thermally conductive block has a thermally conductive block cross-section equal to a cooler block cross-section of said

cooler block.